

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-13 are currently pending. Claims 1 and 10-13 have been amended by the present amendment. The changes to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 1-13 were rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements, such omission amounted to a gap between the elements; Claims 1, 6, and 10-13 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,829,313 to Xu (hereinafter “the ‘313 patent”); and Claims 2-5 and 7-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘313 patent in view of U.S. Patent No. 6,233,709 to Zhang et al. (hereinafter “the ‘709 patent”).

Applicants respectfully traverse the rejection of the claims under 35 U.S.C. § 112, second paragraph, regarding the term “based on.” In this regard, Applicants note that M.P.E.P. §2173.04 states that “[b]readth of a claim is not be equated with indefiniteness. In re Miller, 441 F.2d 669,169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if Applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. § 112, second paragraph.” Applicants respectfully submit that the scope of the subject matter embraced by the claims is clear. In particular, Claim 1 clearly states that the step of determining a submultiple block size and a maximum number of iterations is based on the maximum acceptable error rate. Further, Applicants note that Claim 1 has been amended to include the step of selecting a maximum acceptable error rate of the iterative decoding process. Further, Applicants have consistently stated that Claim 1 states

that there is some relationship between both the determined submultiple block size and the determined maximum number of iterations and the maximum acceptable error rate.

However, Applicants have simply been unwilling to narrow Claim 1 by inserting a formula specifying an exact relationship between those three variables, as is apparently being requested by this Examiner.

Applicants respectfully submit that Claim 1 is merely broad, not vague or indefinite. In this regard, Applicants submit that thousands of patents have issued with claims that include the term “based on” to specify that a relationship exists between particular claimed elements. For example, Applicants note that Claim 1 of U.S. Patent No. 6,477,679 to Such et al., which was cited by the outstanding Office Action, is directed to a method for decoding a sequence of inputs, comprising a first constituent decoder producing a first constituent decoder output based on the feedback input and the first parity input. Thus, the ‘697 patent discloses a method in which a decoder output is based on two inputs. Presumably this claim would have been rejected by the present Examiner under 35 U.S.C. § 112, second paragraph, as omitting essential elements, i.e., for not specifying the exact relationship between the two claimed inputs and the decoder output in Claim 1.

Further, Applicants note that Claim 1 of the cited ‘709 patent is directed to a method of iteratively decoding a coded information signal, including the step of determining a minimum number of iterations of iterative decoding to be performed on the information signal, the minimum number of iterations determined from a bit error rate value. Applicants respectfully submit that the phrase “determined from” is analogous to, if not identical in meaning to, the term “based on.” Accordingly, the ‘709 patent claims a step of determining a minimum number of iterations based on a bit error rate. Applicants fail to see how the language recited in ‘709 Claim 1 is substantially different from the language recited in present Claim 1 in terms of the relationship specified between a number of iterations and a bit

error rate. Again, Applicants presume that '709 Claim 1 would have received a rejection under 35 U.S.C. § 112, second paragraph, from the present Examiner.

Further, Applicants note that page 2 of the outstanding Office Action states that "it is not clear whether some other factor such as SNR which is a function of error rate is used as a basis for determining...." In this regard, Applicants respectfully submit that, in the absence of such claim limitations, the Examiner is free to give Claim 1 the broadest reasonable interpretation. One of ordinary skill in the art would clearly know that the claimed submultiple block size and the maximum number of iterations are based, in some way, on the maximum acceptable error rate. Applicants respectfully submit that Applicant is not required to state "exactly how broadly the Applicant would like the Examiner to interpret the language,"<sup>1</sup> as stated in the outstanding Office Action. Applicants respectfully submit that Claim 1 speaks for itself and clearly states that the determining of the block size and maximum number of iterations is based on the selected maximum acceptable error rate.

Amended Claim 1 is directed to a method of optimizing a size of coded data blocks intended to be subjective to an iterative decoding process, comprising: (1) selecting a maximum acceptable error rate of the iterative decoding process; (2) receiving, at a receiver, coded data sent by a transmitter; and (3) determining, prior to performing the decoding process, but after receiving the received coded data, and based on the selected maximum acceptable error rate, (a) a submultiple block size among a plurality of integer block sizes  $N/k$ , which are submultiples of an integer block size  $N$  by an integer factor  $k \geq 1$ , wherein  $k$  is a factor of  $N$ ; and (b) a maximum number of iterations among a plurality of integers corresponding to a maximum number of iterations to be applied by the iterative decoding process on a coded data block of the submultiple block size, such that a mean number of iterations that will be applied by the iterative decoding process on the submultiple block size

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<sup>1</sup> See page 3 of the outstanding Office Action.

is minimized. Further, Claim 1 has been amended to clarify that the submultiple block size and the maximum number of iterations are determined together prior to performing the iterative decoding process. The changes to Claim 1 are supported by the originally filed specification and do not add new matter.<sup>2</sup>

The '313 patent is directed to a sliding window turbo decoder in which a trellis is divided into windows, a portion of the trellis is decoded using backward recursion from a point that is after the end of the window selected in a previous step backwards to the end of the window, which defines a learning period P. Further, the '313 patent discloses that the length of the learning period is dependent upon the quality of the signal such that a shorter learning period is chosen for a higher quality signal and a longer learning period is chosen for a low quality signal. As shown in Figure 17, the '313 patent discloses that decoding is performed in Step 206 and a learning period is defined based on the quality of the signal. Further, as shown in Step 214 in Figure 17, the learning period is adjusted as the quality of the signal improves. Moreover, the '313 patent discloses that the sliding window is defined to have a length L which is equal to the previously described learning period P.<sup>3</sup> Thus, the '313 patent discloses that the length L depends on the learning period P, which is adjusted as the decoding process is performed. However, Applicants respectfully submit that the '313 patent fails to disclose the step of determining, prior to performing the decoding process, but after receiving the received coded data, a submultiple block size and a maximum number of iterations, wherein the submultiple block size and the maximum number of iterations are determined together prior to performing the iterative decoding process. Rather, the '313 patent discloses that the length L and the learning period P are adjusted based on events occurring during the decoding process.

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<sup>2</sup> See, e.g., Figure 7 and the discussion related thereto in the specification.

<sup>3</sup> See '313 patent, column 6, lines 42-44.

In addition, Applicants respectfully submit that the '313 patent fails to mention a maximum number of iterations that is determined prior to performing the decoding process. Further, Applicants have been unable to find a citation in the outstanding Office Action to the '313 patent that indicates where that reference discloses the determined maximum number of iterations.

Further, regarding the claimed mean number of iterations, the '313 patent merely discloses that a by-product of the '313 invention is that the number of iterations is reduced. However, Applicants respectfully submit that this is not a disclosure that a submultiple block size and a maximum number of iterations is determined prior to performing the decoding process in a way such that a mean number of iterations that will be applied by the integer decoding process is minimized. The '313 patent does not disclose that the block size and the number of iterations is selected or determined to reduce the mean number of iterations on the determined block size, but that as a by-product of the '313 system, the total overall number of iterations is reduced.

Thus, for the reasons stated above, Applicants respectfully traverse the rejection of Claim 1 (and all similarly rejected dependent claims) as being anticipated by the '313 patent.

Independent Claims 10-13 recite limitations analogous to the limitations recited in Claim 1. Moreover, Claims 10-13 have been amended in a manner analogous to the amendment to Claim 1. Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully traverse the rejection of Claims 10-13 as anticipated by the '313 patent.

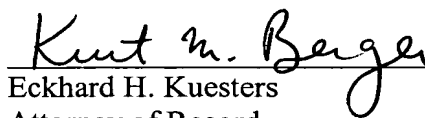
Regarding the rejection of dependent Claims 2-5 and 7-9 under 35 U.S.C. § 103, Applicants respectfully submit that the '709 patent fails to remedy the deficiencies of the '313 patent, as discussed above. Accordingly, Applicants respectfully traverse the rejection of dependent Claims 2-5 and 7-9 under 35 U.S.C. § 103.

Thus, it is respectfully submitted that independent Claims 1 and 10-13 (and all associated dependent claims) patentably define over any proper combination of the '313 and '709 patents.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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